



UNITED STATES PATENT AND TRADEMARK OFFICE

ma
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,408	02/25/2002	Shigeo Nakamura	2653-103	9152

6449 7590 02/12/2004

ROTHWELL, FIGG, ERNST & MANBECK, P.C.
1425 K STREET, N.W.
SUITE 800
WASHINGTON, DC 20005

EXAMINER

HARAN, JOHN T

ART UNIT PAPER NUMBER

1733

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,408

Applicant(s)

NAKAMURA ET AL.

Examiner

John T. Haran

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/25/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/999,932.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 2/25/02 and 8/6/02 are being considered by the examiner. It is noted that the 5 non patent literature documents cited on the IDS submitted on 8/6/02 have not been considered because they are in Japanese and there is no translation or explanation of their relevance.

Specification

2. The disclosure is objected to because of the following informalities: on page 1, the specification should be amended to indicate that 09/721,664 is now U.S. Patent 6,376,053.

Appropriate correction is required.

Claim Objections

3. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 16 depends from claim 15 and requires the same limitations as claim 15 and therefore fails to further limit the subject matter of claim 15.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1733

5. Claims 3-16 and 19-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 5 are indefinite because both claims require a resin composition that is **solid** at ambient temperature but also requires that the resin composition comprise an epoxy resin that is **liquid** at ambient temperature. It is entirely unclear how a resin that is solid at ambient temperature can have a component that is liquid at ambient temperature. Is the resin composition actually solid or is it semisolid (i.e. a gel or in the B-stage)? Is the resin composition solid because the liquid epoxy is mixed with other components and the mixing results in a solid composition? Clarification and/or an appropriate amendment is requested.

Claims 4 and 6 have the same problem with requiring an additional liquid resin other than the liquid epoxy to be part of the solid resin composition.

Claim 7 is indefinite for having improper Markush language. There should be an "and" between "inorganic fillers" and "organic fillers".

Double Patenting

6. Applicant is advised that should claim 17 is be found allowable, claim 25 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing

Art Unit: 1733

one claim to object to the other as being a substantial duplicate of the allowed claim.

See MPEP § 706.03(k).

The only difference between claim 17 and claim 25 is that claim 25 specifies the pressure and temperature range at which the product is formed. Absent any teaching that the bonding at the specified pressure and temperature ranges results in a materially different product, claims 17 and 25 are considered to be claiming the same product and are therefore duplicate claims.

7. Applicant is advised that should claim 26 be found allowable, claim 27 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 26 is the product made by the process of claim 15 and claim 27 is the product made by the process of claim 16. As noted previously, claim 16 is objected to for failing to further limit claim 15 since it is claiming the same method steps as claim 15. Since claims 15 and 16 are claiming the same method the products will be the same and therefore claims 26 and 27 are duplicate claims.

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

Art Unit: 1733

1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 18, 22, and 23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4, 16, 13, and 12 of U.S. Patent No. 6,376,053 in view of JP 05-136575.

Claim 18 of the present application is the same as claims 4 and 16 of U.S. Patent 6,376,053, claim 22 of the present application is the same as claim 13 of U.S. Patent 6,376,053, and claim 23 of the present application is the same as claim 12 of U.S. Patent 6,376,053 except that claims 18, 22, and 23 additionally require that the resin composition has a support film base layer. Claims 18, 22, and 23 of the present application are intermediates of the final products claimed in claims 4, 16, 13, and 12 of U.S. Patent 6,376,053.

JP 05-136575, teaches an interlaminar adhesive film comprising a support film base layer and a resin composition that is solid at ambient temperature wherein the adhesive film is laminated under heat and pressure to a circuit board with an electric conductor layer pattern thereon and the support film base layer is subsequently removed (See Figure 1a-d; translation of paragraph 0032). It would have been obvious to one of ordinary skill in the art to make the product of claims 4, 6, 12, and 13 wherein in the process there is an intermediate product with resin composition that is solid at

Art Unit: 1733

ambient temperature with a support film base layer laminated to a circuit board and the support film base layer is subsequently removed to arrive at the product of the patented claims as suggested in JP 05-136575.

It is noted that claims 18, 22, and 23 were not present in either of the parent applications, but if they had been originally presented in the parent application they would not have been restricted and therefore the obviousness-type double patenting rejection is proper.

It is also noted that claims 2, 4, 6 were not present in either of the parent application, but would have been restrictable from related patented claims 14 and 15, and therefore an obviousness type double patenting would not be proper.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 05-136575.

JP 05-136575 discloses an interlaminar adhesive film comprising a support film base layer and a resin composition which is laminated under heat and pressure to an internal-layer of a circuit board having an electric conductor layer pattern thereon wherein the resin composition has a resin flow that is at least a thicken of the electric

Art Unit: 1733

conductor (See Figures 1a-d and translated paragraph 0032). The resin composition is applied to the support film base layer in a solution and is subsequently dried resulting in a resin composition that is solid at ambient temperature (translated paragraph 0028).

Also at least 10% by weight of the resin composition comprises a resin with a softening temperature less than the laminating temperature of 135 degrees Celsius (See translated paragraph 0028, 0032 and Table 1). JP 05-136575 anticipates claims 1, 2, 17, and 18.

It is noted that as currently worded, claims 1 and 2 make it optional for the circuit board to have a superficial via hole or a through-hole and thus there is no requirement for the board to have such.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 13, 15, 16, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 05-136575.

JP 05-136575 is relied upon for the teachings noted above.

Regarding claims 13 and 25, JP 05-136575 teaches laminating the adhesive film to the printed circuit board with a temperature of 130 degrees Celsius and a laminating

Art Unit: 1733

pressure of 4.5 kg/cm² (translated paragraph 0032), but is silent towards the atmospheric pressure (reduced pressure). One skilled in the art would have readily appreciated that the working conditions are within the purview of one skilled in the art and one skilled in the art would have been motivated to determine the necessary working conditions for laminating the film. Additionally, JP 05-136575 is directed to making sure that there are no pores or air voids in the laminate and one skilled in the art would have readily appreciated accomplishing this by bonding in a reduced atmosphere (translated paragraph 0032). It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the lamination in a reduced atmosphere of the claimed range.

Regarding claims 15, 16, 26, and 27, JP 05-136575 teaches peeling off the support base film, thermally curing the resin composition subsequent to lamination, drilling a through hole in the resin, scrubbing (cleaning) resin, and forming a conductor layer on top by plating (translated paragraph 0032-0034), but is silent towards using a dry process to scrub and a dry plating process. One skilled in the art would have readily appreciated that both are known and alternate expedients to and obvious over the corresponding wet processes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use known techniques and alternate expedients (wet plating and wet scrubbing) in the method of JP 05-136575.

14. Claims 12, 14, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 05-136575 in view of JP 08-316642.

Art Unit: 1733

JP 05-136575 is relied upon for the teachings noted above. JP 05-136575 teaches peeling off the support film base layer, thermally curing the laminated resin, and plating a copper layer on the resin (translated paragraphs 0032 and 0034), but is silent towards laminating a copper foil onto the resin layer.

JP 08-316642, teaches laminating an adhesive layer with a support film base layer to a printed circuit board, peeling off the support base layer and laminating a copper foil onto the resin layer (See Figures and translated paragraph 0061). One skilled in the art would have readily recognized that laminating a copper foil and plating a copper layer are alternate expedients for accomplishing the same goal of having a copper layer over the resin and the two are obvious over one another. It would have been obvious to one of ordinary skill in the art at the time the invention was made to laminate a copper foil on to the resin layer after peeling off the support film base layer in the method of JP 05-136575, as suggested in JP 08-316642.

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 05-136575 in view of Takahashi et al (U.S. Patent 5,309,632).

JP 05-136575 is relied upon for the teachings noted above and is silent towards the resin having (i) at least one scrubbing component selected from the group consisting of rubber components, amino resins, inorganic fillers, and organic fillers or (ii) at least one electroless plating catalyst selected from the group consisting of metals, metal compounds, and inorganic compositions having metal or metal compounds absorbed or coated thereon.

Art Unit: 1733

It is well known and conventional in the printed circuit board art to coat the circuit board with adhesives that contain scrubbing components such as rubber components and inorganic fillers as well as electroless plating catalysts such as metals, as shown for example in Takahashi et al (Column 2, lines 57-60; Column 3, lines 32-41). Takahashi is silent towards the weight percentages of the scrubbing components and electroless plating catalysts in the resin composition, however one skilled in the art would have readily appreciated that it is within the purview of one skilled in the art to determine the necessary amounts needed for the desired scrubbing and electroless plating. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a scrubbing component or electroless plating catalyst in the resin composition of JP 05-136575 in the desired percentages as is well known and conventional in the art in order to aid in the cleaning (scrubbing) and plating steps of JP 05-136575.

Allowable Subject Matter

16. Claims 3-6, 8-11, and 19-21 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

17. Claims 8-11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 1733

18. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 3, the prior art of record fails to suggest the claimed process for producing a multi-layer printed wiring board, particularly having an inter-laminar adhesive film that has a layer of resin composition that is solid at ambient temperature and comprising the claimed components a-c. Absent an art showing a resin composition that is solid at ambient temperature and comprising the claimed components a-c, claim 3 is considered allowable.

It is noted that the resin composition claimed in claim 4 was found allowable in claim 14 of related U.S. Patent 6,376,053.

Regarding claim 5, the prior art of record fails to suggest the claimed process for producing a multi-layer printed wiring board, particularly having an inter-laminar adhesive film that has a layer of resin composition that is solid at ambient temperature and comprising the claimed components a-d. Absent an art showing a resin composition that is solid at ambient temperature and comprising the claimed components a-d, claim 5 is considered allowable.

It is noted that the resin composition claimed in claim 6 was found allowable in claims 1 and 15 of related U.S. Patent 6,376,053.

Regarding claim 8, the prior art of record fails to suggest the claimed process for producing a multi-layer printed wiring board, particularly having an inter-laminar adhesive film that has a layer of a scrubbable resin composition that is solid at ambient temperature comprising the claimed components a-c interposed between a support film

Art Unit: 1733

layer and solid resin composition. Absent an art showing the claimed inter-laminar adhesive film, claim 8 is considered allowable.

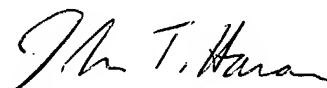
Regarding claim 11, the prior art of record fails to suggest the claimed process for producing a multi-layer printed wiring board, particularly having an inter-laminar adhesive film that has a layer of an additive resin composition that is solid at ambient temperature comprising the claimed components a-c interposed between a support film layer and solid resin composition. Absent an art showing the claimed inter-laminar adhesive film, claim 11 is considered allowable.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John T. Haran** whose telephone number is (571) 272-1217. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


John T. Haran
Examiner
Art Unit 1733